Predictive Engineering

INTRODUCTION

Predictive Engineering is a specialized life cycle process for assuring safety, reliability, and readiness by predicting and evaluating the service/shelf life of an item. The primary goal of this process is to predict if an item will survive the unique military environment for a period ranging 10-30 years. This approach to the life cycle process maximizes the probability that an item will survive its intended life, through the early identification, elimination, or mitigation of design inadequacies.

PREDICTIVE LIFE CYCLE PROCESS

Predictive Engineering is a scientific based discipline that provides the tools and methodology aimed at reducing premature degradation and/or failure of items under storage conditions or operational environments. Returns on investments are at their optimum, by applying Predictive Engineering early in the Research and Development phase, by avoiding the high costs of corrective actions in the later stages of development, production, or deployment. The achievement of cost savings through the early elimination or mitigation of environmentally induced degradation propensities and process sensitivities is a sound economical approach to engineering.

Our initial efforts focus on design reviews, to identify weak links in components, assemblies, or manufacturing processes that could result in end item failure. Following design reviews, we model the phenomena associated with the physics-of-failure to ascertain and predict the consequences of the item's exposure to the intended military (storage and operational) life cycle.

The key to the Predictive Engineering process is the application of predictive algorithms that encompass all the robust facets from design of experiment, accelerated aging/life testing, and statistical analysis. The strength of Predictive Engineering is the impact of its life modeling techniques employing life-limiting factors as its premise on predicting the safety, reliability, and performance of the end item. Life models are most effective when integrated into environmental smart sensors that provide real-time indicators of readiness. An additional benefit of predictive life models is its portability to field or desktop workstations as a life cycle management decision tool.

PREDICTIVE ENGINEERING PROCESS
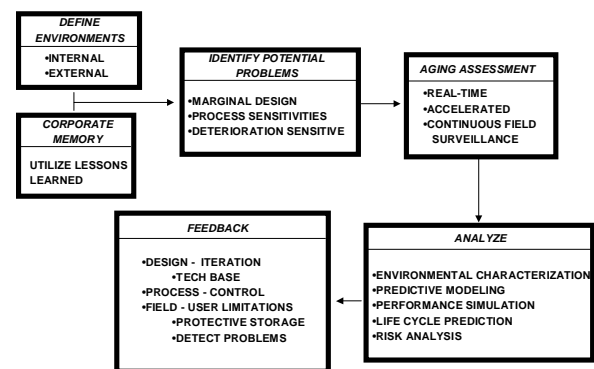
BENEFITS

The payoff to the Army and its War Fighter include:

- ❑ Assurance the weapon systems achieve high reliability and mission success by predicting readiness
- ❑ Enable logistical situational awareness and anticipatory supply and maintenance
- ❑ Reduce Total Ownership Cost
- ❑ Support upgrades, service, and shelf life extension.

For additional information, please contact

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